Serial No. 09/589,510
Group Art Unit: 1638

REMARKS

Reconsideration of the present application is respectfully requested. Claims 1, 3-9 and 14-28 are pending. Claims 1 and 3 have been amended. New claims 14-27 have been added. Support for the amendments is found in the claims as originally filed, and throughout the specification. No new matter has been added.

Claim 1 has been amended for clarification. After "isolated", the term "nucleic acid" has been replaced with the term "polynucleotide" in the preamble of the claims to refer to the composition claimed. The term "polynucleotide" has been replaced by the phrase "nucleic acid sequence" to clarify the claim. New claims 14, 15, 17-19 use the same terminology.

Claim 1 has been amended to recite a "nucleic acid sequence having at least 90% sequence identity" to SEQ ID NO: 3. Support for this amendment is found on page 28, lines 3-6. Claim 1 has further been amended to recite the function that the polynucleotides "encode a polypeptide with helicase activity". Support for this amendment is found on page 2, lines 3-26.

Claim 3 has been amended to correct antecedent basis and now refers to "the" polynucleotide of claim 1.

New claims 14 and 15 are dependent on claim 1, and further restrict the percent sequence identity of the claimed polynucleotides. Support for these claims is found in original claim 1, and on page 28, lines 3-6.

New claim 16 claims an isolated polynucleotide comprising at least 100 contiguous nucleotides of SEQ ID NO: 3. Support for this claim is found on page 31, line 12 – page 32, line 4, especially page 31, lines 17-20.

New claim 17 claims an isolated polynucleotide which encodes a polypeptide having at least 90% sequence identity to SEQ ID NO: 4, and has helicase activity. New claims 18-19, which depend from claim 17 further restrict the percent sequence identity of the compared polypeptides. Support for these claims are found in original

claim 1; page 2, lines 3-26; page 6, line 10 – page 7, line 16; page 20, lines 9-28; page 24, line 27 – page 25, line 6; page 28, lines 7-19; page 29, lines 6-18; page 44, lines 28-32; and page 57, lines 12-26.

New claims 20-27 depend from claim new claim 17 and are similar to original claims 3-9, and find support in the originally filed claims.

New claim 28 directed to an isolated polynucleotide which encodes a polypeptide comprising at least 50 contiguous amino acids of SEQ ID NO: 4. Support for this claim is found on page 29, lines 6-18 and throughout the specification.

The Examiner noted that page 5 of the response of 2/14/02 was missing, and a substitute page is required. A response was filed 2/19/02. A substitute sheet of page 5 of the response of 2/19/02 is submitted in order to comply with the requirement. If this is done in error, Applicants request early notification in order to properly comply with the requirement.

The paragraph beginning on line 25 of page 23 has been amended to correct a typographical error.

The marked up version of these amendments is found on a separate sheet attached to this amendment and titled "**Version with Markings to Show Changes Made.**" It is respectfully requested that the amendments be entered.

Rejections under 35 U.S.C. §101:

Claims 1, 3-9 are rejected under 35 U.S.C. §101 as not having either a credible asserted utility or a well-established utility.

The Examiner asserts that "...neither Applicants' specification nor the prior art teaches or provides guidance for how RuvB activity can be assayed or tested."

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Claim 1 has been amended to recite "wherein the polynucleotide encodes a polypeptide having helicase." Support for this amendment can be found on page 2, lines 3-26.

Contrary to the Examiner's assertion, assays for RuvB are known in the art. For example, in their study of the RuvB homologue TIP49, Makino, *et al.* (*Biochem. Biophys. Res. Comm.* 245:819-823 1998, Ref. A5 in IDS submitted 8/28/00) describe ELISA and immunoblotting assays (page 820, col. 2, paragraphs 5 and 6; and Fig. 3, page 822). Kishimoto, et al. (EP 0 926 157 A1, Ref A12 in IDS submitted 2/22/01) further disclosed ATPase and helicase assays for TIP49 (Examples 7-9, page 16, paragraph 0095 page 17, paragraph 0101). Qui, *et al.* (*J. Biol. Chem.* 273(43):27786-27798 1998, Ref. A4 in IDS submitted 8/28/00) describe several assays for RuvB including gels and immunoblots (page 27787, col. 1, paragraph 4; and Fig. 3, page 27791); RNA polymerase II holoenzyme binding (page 27790, col. 1, paragraph 4); and complementation tests in yeast (page 27787, col. 2, paragraph 6 – page 27788, col. 1, paragraph 1, and page 27790, col. 2, 3rd paragraph). Further, various immunoassays are discussed in the specification (page 29, line 25 – page 30, line 4), particularly a competitive ELISA, which is particularly useful for measuring protein levels.

Applicants believe that the present invention has a well-established utility for which they have proposed specific, substantial and credible uses in the present application. As amended, the claims require the utility that the polynucleotides encode a polypeptide with helicase activity. Applicants have properly addressed by argument and amendment the grounds for the rejection of claims 1, and 3-9 under 35 U.S.C. §101 and respectfully request that the rejection be withdrawn, and not applied to new claims 14-28.

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Rejections under 35 U.S.C. §112, first paragraph – Utility:

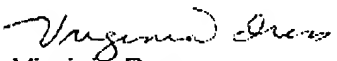
Claims 1, and 3-9 are rejected under 35 U.S.C. §112, first paragraph as the claimed invention lacks utility, therefore one of skill in the art would know how to use the invention.

As the Applicants have responded to the utility rejection under 35 U.S.C. §101, it is believed that the utility rejection has been overcome. As amended, the claims require the utility that the polynucleotides encode a polypeptide with helicase activity. Therefore, it is respectfully requested that the concomitant rejection of claims 1, and 3-9 under 35 U.S.C. §112, first paragraph based on a lack of utility should be withdrawn, and not applied to new claims 14-28.

CONCLUSION

In light of the foregoing remarks and amendments, it is believed that claims 1, 3-9 and 14-28 are in condition for allowance. Withdrawal of the outstanding rejections and allowance of all of the remaining claims is respectfully requested.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

The Applicants have used underlining to denote additions to the original text and square brackets [ ] to denote deletions of the original text.

In the Specification:

The paragraph beginning at page 23, line 25 has been amended as follows:

A polynucleotide of the present invention is inclusive of:

(a) a polynucleotide encoding a polypeptide of SEQ ID NOS: 2, 4, 6, 8, 10 and conservatively modified and polymorphic variants thereof, including exemplary polynucleotides of SEQ ID NOS: 1, 3, 5, 7, 9; polynucleotide sequences of the invention also include the maize [R2] RuvB polynucleotide sequences as contained in plasmids deposited with American Type Culture Collection (ATCC) and assigned Accession Number 207193.

In the Claims:

Claims 1 and 3 have been amended as follows:

1. (Twice Amended) An isolated [nucleic acid] polynucleotide comprising a member selected from the group consisting of:

(a) a [polynucleotide] nucleic acid sequence having at least [85%] 90% sequence identity to [a polynucleotide of] SEQ ID NO: 3, wherein the % sequence identity is based on the entire coding region and is calculated by the GAP algorithm under default parameters, wherein the

[polynucleotide] sequence encodes a polypeptide with [RuvB] helicase activity;

(b) [a polynucleotide encoding a polypeptide of SEQ ID NO: 4;

(c) a polynucleotide of SEQ ID NO: 3; and

(d)] a [polynucleotide] nucleic acid sequence which is fully complementary to [a polynucleotide] the nucleic acid sequence of (a)[, (b), or (c)].

3. (Twice amended) A recombinant expression cassette, comprising [a] the polynucleotide of claim 1 operably linked to a promoter.

New claims 14-28 have been added as follows:

14. The isolated polynucleotide of claim 1, wherein the nucleic acid sequence of (a) has at least 95% sequence identity to SEQ ID NO: 3.

15. The isolated polynucleotide of claim 1, wherein the nucleic acid sequence is SEQ ID NO: 3.

16. An isolated polynucleotide comprising at least 100 contiguous nucleotides of SEQ ID NO: 3.

17. An isolated polynucleotide comprising a member selected from the group consisting of:

(a) a nucleic acid sequence encoding a polypeptide having at least 90% sequence identity of the entire length of SEQ ID NO: 4, as determined by the GAP algorithm under default parameters, wherein the encoded polypeptide has helicase activity; and,

(b) a nucleic acid sequence which is fully complementary to the nucleic acid sequence of (a).

18. The isolated polynucleotide of claim 17, wherein the nucleic acid sequence of (a) encodes a polypeptide having at least 95% sequence identity to SEQ ID NO: 4.

19. The isolated polynucleotide of claim 17, wherein the polynucleotide encodes the polypeptide of SEQ ID NO: 4.

20. A recombinant expression cassette comprising the polynucleotide of claim 17 operably linked to a promoter.

21. A non-human host cell comprising the recombinant expression cassette of claim 20.

22. The host cell of claim 21, wherein the host cell is a plant cell.

23. A transgenic plant comprising the recombinant expression cassette of claim 20.

24. The transgenic plant of claim 23, wherein said plant is a monocot.

25. The transgenic plant of claim 23, wherein said plant is a dicot.

26. The transgenic plant of claim 23, wherein said plant is selected from the group consisting of maize, soybean, safflower, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.

27. A transgenic seed from the transgenic plant of claim 45.

28. An isolated polynucleotide which encodes a polypeptide comprising at least 50 contiguous amino acids of SEQ ID NO: 4.